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CONSTRUCTION ENGINEERING RESEARCH LAB (ARMY) CHAMPAIGN IL F/G 5/3
ECONOMIC IMPACT FORECAST SYSTEM (EIFS). VERSION 2.0. USERS MANU--ETC(U)
MAY 82 R D WEBSTER, S ODOM, J W HAMILTON
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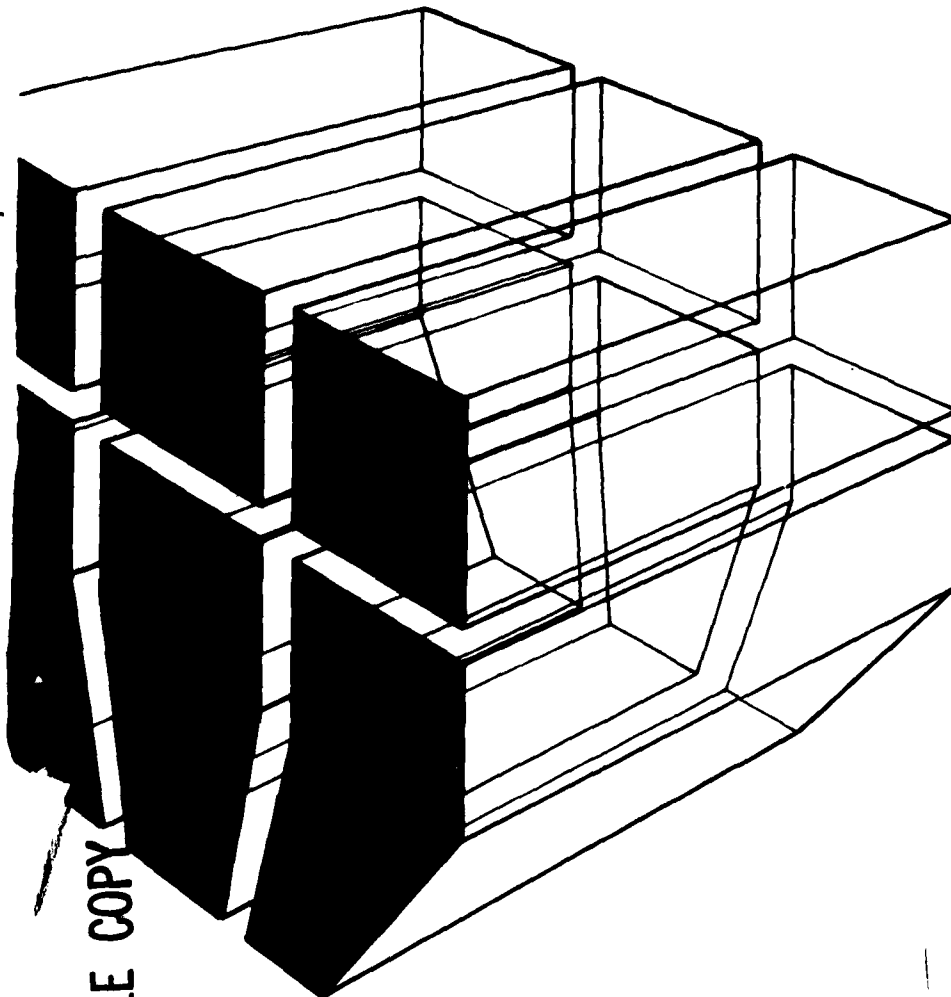


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TECHNICAL REPORT N-69
May 1982

SUPPLEMENT II TO THE ECONOMIC IMPACT FORECAST
SYSTEM (EIFS) VERSION 2.0: USERS MANUAL—EUROPEAN
ECONOMIC IMPACT FORECAST SYSTEM (EEIFS), PHASE 1
(FRG/EIFS PILOT MODEL)



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by
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This supplement describes Phase 1 of the development of a European Economic Impact Forecast System (EEIFS) by the U.S. Army Construction Engineering Research Laboratory (CERL). EEIFS is designed to interface with the EIFS component of CERL's Environmental Technical Information System (ETIS). [continued]		

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BLOCK 20 Continued

➤ This supplement describes the data acquisition and pilot model development of an EIFS model which includes statistics to predict the regional economic benefits and impacts of defense-related activities in the Federal Republic of Germany (FRG). User instructions and employment data for the FRG/EIFS data base are given.

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FOREWORD

This research was conducted for the Directorate of Military Programs, Office of the Chief of Engineers (OCE), under Project 4A762720A896, "Environmental Quality Technology"; Task C, "Environmental Assessment"; Work Unit 004, "Development of EIFS II." The OCE Technical Monitor was Mr. Vince Gottschalk, DAEN-MPE.

The work was performed by the Environmental Division (EN) of the U.S. Army Construction Engineering Research Laboratory (CERL). Dr. R. K. Jain is Chief of CERL-EN.

COL Louis J. Circeo is Commander and Director of CERL, and Dr. L. R. Shaffer is Technical Director.

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**SUPPLEMENT II TO THE ECONOMIC
IMPACT FORECAST SYSTEM (EIFS)
VERSION 2.0: USERS MANUAL—
EUROPEAN ECONOMIC IMPACT FORE-
CAST SYSTEM (EEIFS), PHASE 1
(FRG/EIFS PILOT MODEL)**

1 INTRODUCTION

Background

The Environmental Technical Information System (ETIS) was developed by the U.S. Army Construction Engineering Research Laboratory (CERL) to help installation-level military personnel meet the planning and documentation requirements of the National Environmental Policy Act and related Department of the Army requirements.¹ One component of ETIS is the Economic Impact Forecast System (EIFS). Since 1976, EIFS has been used by the Army, Air Force, and other Federal agencies to estimate, evaluate, and document the economic impacts of military realignments, construction projects, and other programs.

Recently, CERL began a two-phase study to modify EIFS to consider the potential beneficial economic effects of military construction and other activities in Europe. This modified system, called the European Economic Impact Forecast System (EEIFS), interfaces with the existing EIFS component of ETIS.²

Objective

The overall objective of this study is to develop a European Economic Impact Forecast System which can predict the regional economic benefits and impacts of defense-related activities within Europe. This report documents Phase 1 of this study, the development of a pilot EIFS model for the Federal Republic of Germany (FRG).

¹ R. D. Webster, R. L. Welsh, and R. K. Jain, *Development of the Environmental Technical Information System*, Interim Report E-52/ADA009668 (U.S. Army Construction Engineering Research Laboratory [CERL], April 1975); National Environmental Policy Act of 1969, 83 Stat 852, 42 USC 4321 et seq. (January 1970); and *Environmental Protection and Enhancement*, Army Regulation (AR) 200-1 (Department of the Army, February 1974).

² J. W. Hamilton and R. D. Webster, *Economic Impact Forecast System Revised Users Manual*, Technical Report N-69/ADA073667 (CERL, July 1979).

Approach

The approach to Phase 1 of this study was:

1. Collect appropriate detailed FRG economic data.
2. Modify existing EIFS procedures and algorithms to include (a) available FRG economic data, (b) FRG-specific institutional and socioeconomic relationships, and (c) the needs of European military users.
3. Develop a pilot FRG/EIFS model.
4. Field test the pilot FRG/EIFS model.

Phase 2 of this study will:

1. Evaluate the results of the pilot FRG/EIFS model.
2. Extend the EIFS data to include additional economic data from FRG and other European countries.

This report describes Steps 1 through 3 of Phase 1.

Mode of Technology Transfer

EEIFS will be disseminated in accordance with procedures set forth in Army Regulation (AR) 18-1, *Management Systems Policies, Objectives, Procedures, and Responsibilities* (Department of the Army, March 1976).

2 FRG/EIFS PILOT MODEL DESCRIPTION

Data Acquisition

It was considerably more difficult to collect data for the pilot FRG/EIFS model than it was for the original version of EIFS. FRG data are not available with the degree of consistency found in the United States. The FRG has no agencies comparable to the U.S. Department of Commerce Activities, the Bureau of Census, or the Bureau of Economic Analysis, which collect uniform data for general application. In addition, variations exist in regional FRG definitions and nomenclature. FRG statistics are usually referenced on many different schemes, according to different geographic FRG agency jurisdictions.

Because of these FRG data irregularities, the FRG/EIFS model data base could not be the same as that of

the original EIFS. Thus, the pilot model data base for EEIFS contains only the following variables:

1. Gross domestic product in 1976.
2. Gross domestic product in 1976 (per capita of residential population).
3. Total population in 1976 (population age groups less than 6, 6<10, 10<15, 15<18, 18<21, 21<25, 25<30, 30<35, 35<40, 40<50, 50<60, 60<65, and greater than 65).
4. Industry employment in 1979.
5. Wages and salaries paid by industries in 1979 (average gross income per employee).
6. Total business volume in 1979.
7. Total business volume per employee by lander (State) and krieze (county).

The level of detail for FRG employment distribution data in the FRG/EIFS data base is not comparable to the original EIFS. Although it is important to use a highly disaggregated data base to ensure reasonable multiplier values (essential in systems such as EIFS which are based on export base location quotient techniques), CERL initially was unable to find data more detailed than the two-digit or division level. Recently, however, data at the three-digit (or slightly better than three-digit) level have been located. These data will be incorporated into the pilot FRG/EIFS model. Samples of FRG/EIFS model data are in the appendix.

Geographic Referencing

The FRG/EIFS pilot system has all its data referenced to FRG geographic regions (Table 1). The geographic referencing for the pilot model is equivalent to the county-level referencing used in the original EIFS.

3 USER INSTRUCTIONS

A Telenet number is used to access the ETIS from Europe. (Telenet numbers are local numbers available in most major European cities.) After local Telenet

protocol is met, the user must supply a computer identification; the ETIS host computer identifier is 217 26. ETIS will ask the user for the login and password. The user may then select from two ETIS menu sets: the standard ETIS menu and the experimental (XPER) menu. The FRG/EIFS model is available under XPER. EIFS user instructions are documented in the *EIFS Revised Users Manual*.³

The FRG/EIFS model system works through (1) the definition of the region, (2) selection of desired analyses, and (3) input of appropriate data. While this pilot model will be modified, existing output can be characterized as follows:

1. Define the region.

First region: stuttgart
Next region (or <cr> if done):

2. Select the desired analysis (for example, the employment profile).

The FRG/EIFS model allows the user to calculate the socioeconomic effects of a project in the region of interest. In this way, the user can plan to mitigate any severe impacts the project may have on a region. The model also allows the user to develop and test alternatives to find the most acceptable scenario. At present, the FRG/EIFS model contains Mission Change and Construction profiles (Figures 1 and 2).

4 CONCLUSION

This supplement described a model to predict the potential beneficial impacts of defense-related activities on the Federal Republic of Germany. The model is a modified version of the ETIS component system called EIFS. The FRG/EIFS model data base includes economic employment data and considers FRG-specific institutional and socioeconomic relationships. The data base is referenced to FRG regions. Access and user instructions are given.

³J. W. Hamilton and R. D. Webster, *Economic Impact Forecast System Revised Users Manual*, Technical Report N-69/ADA073667 (CERL, July 1979).

Table I
FRG Geographic Regions

AACHEN	HEIDELBERG	PADERBORN
AALEN	HEILBRONN	PASSAU
AHIEN	HELMSTEDT	PFARRKIRCHEN
ANSBACH	HERFORD	PFORZHEIM
ASCHAFFENBURG	HILDESHEIM	PIRMASENS
AUGSBURG	HOC	RASTATT
BAD HERSFELD	INGOLSTADT	RAVENSBURG
BAD KREUZNACH	ISERLOHM	RECKLINGHAUSEN
BAD OLDESLOE	KAISERSLAUTERNS	REGENSBURG
BALINGEN	KARLSRUHE	REUTLINGEN
BAMBERS	KASSEL	RHEINE
BAYREUTH	KEMPTEN	ROSENHEIM
BERGISCH-GLADBACH	KEIL	ROTTWEIL
BIELEFELD	KOBLENZ	SAARBRUCKEN
BOCHUM	KOLN	SAARLOUIS
BONN	KONSTANZ	SCHWAB-HALL
BRAUNSCHWEIG	KORBACH	SCHWANDORF
BEEMEN	KREFELD	SCHWEINFURT
BREMERHAVEN	LANDSHUT	SIEGEN
BRAUHL	LEER	SOEST
CABURG	LIMBURG	SOLINGEM
CEELE	LORRACH	STADE
COESFELD	LABECK	STUTTGART
DARMSTADT	LUDWIGSBURG	TAUBERBISCHOFSEIM
DEGUENDORE	LUDWIGSHAFEN	TRAUNSTEIN
DETMOLD	LUNEBURG	TRIER
DONAUWORTH	MAINZ	UELZEN
DORTMUNA	MANNEHEIM	ULM
DUREN	MARBURS	VECHTA
DUISBURG	MAYEN	VERDEN
DUSSELDORE	MEMMINGEN	VILLINGEN-SCHWENNINGEN
ELMSHORN	MESCHEDE-BRILON	WAIBLINGER
EMPDEN	MONCHENGLADBACH	WEIDEN
ESSEX	MONTABAU	WEIBENBURG
FLENSBURG	MUNCHEN	WEILHEIM
FRANKFURT	MUNSTER	WESEL
FREIBURG	NAGOWD	WEST BERLIN
FREISING	NEUMUNSTER	WETZLAR
FULDA	NEUNKIRCHEN	WIESBADEN
GELDENKIRCHEN	NEUSTADT	WILHELMSHAVEN
GIE BEN	NEUWIED	WUPPERTAL
GOPPINGEN	NIEBURG	WURZBURG
GOSLAR	NORDHORN	
GOTTINGEN	NURNBERG	
HAGEIN	OFFENBACH	
HAMBURG	OFFENBURG	
HAMELN	OHERHAUSEN	
HAMM	OLDENBURG	
HANAU	OSNABRUCK	
HANNOVER		
HEIDE		

PROFILE 1: MISSION CHANGE

The mission change profile requires six user inputs (User input is underlined.)

Which model (type ? for help)? stuttgart

Which model (type ? for help)? 1

Mission change

Change in the number of military personnel:	-55
Average income of military personnel:	17,000
%% of military personnel who live on-base:	56
Change in the number of civilian personnel:	-45
Average income of civilian personnel:	18,000
Change in local procurement (services and supplies):	-1,600,000

FRG/EIFS will respond with a prediction of the impacts on the local economy

Change in local income:	\$ 12,855,202
Direct change in local income:	\$ 3,472,800
Local construction procurement:	\$ 1,875,000
Local civilian personnel income:	\$ 793,800
Military personnel income:	\$ 804,100
On-base military personnel:	\$ 392,700
Off-base military personnel:	\$ 411,400
Indirect change in local income:	\$ 9,382,302
(Income multiplier):	3.7016
(Indirect/direct ratio = net multiplier):	2.7016 Average
Average income of local employees:	\$ 19,512
Change in local employment:	659

Figure 1. Mission Change profile.

PROFILE 2: CONSTRUCTION

The construction profile requires eight user inputs (User input is underlined.)

First region: stuttgart next region (or <cr> if done):

The multiplier is: 3.7016

Which model (type ? for help)? 2

Construction

Change in the number of military personnel:	55
Average income of military personnel:	17,000
%% of military personnel who live on-base:	56
Change in the number of local civilian personnel:	45
Average income of civilian personnel:	18,000
%% of civilian personnel who live in local region:	98
Change in local procurement (construction):	2,500,000
%% construction spending in local region:	75

FRG/EIFS will respond with a prediction of the impacts on the local economy

Change in local income:	\$ -11,527,077
Direct change in local income:	\$ -3,114,000
Procurement:	\$ -1,800,000
Civilian personnel income:	\$ -810,000
Military personnel income:	\$ -804,100
On-base military personnel:	\$ -392,700
Off-base military personnel:	\$ -411,400
Indirect change in local income:	\$ -8,412,977
(Income multiplier):	3.7016
(Indirect/direct ratio = net multiplier):	2.7016 Average
Income of local employees:	\$ 19,512
Change in local employment:	-591

Figure 2. Constr... n profile.

APPENDIX: EMPLOYMENT DATA

First region: stuttgart
Next region (or <cr> if done):

The multiplier is: 3.7016
Which model (type ? for help)? 3

National Employment	Regional Employment	Industry
20,550,946	477,135	total
93,407	161	farming and animal husbandry
91,936	1,575	horticulture and viticulture
30,972	117	forestry and hunting
231,134	4,766	water, gas and power utilities
548,650	4,875	chemical industries
31,534	150	processing of mineral oil
231,726	991	plastics processing
111,283	1,709	rubber and asbestos processing
221,081	1,285	extraction and processing of stone and soil
76,741	137	fine ceramics
80,614	46	manufacturing and processing of glass
274,664	54	iron and steel production
65,877	1,187	non-ferrous metal production
121,834	934	foundries
62,093	327	steel drawing works and cold rolling mills
141,553	1,824	steel working, finishing and tempering
66,609	1,015	locksmith, welding, polishing and forging
170,687	2,066	steel, light metal and container construction
27,221	2,129	railroad, field and industry car construction
143,881	3,526	A/C, heating and health related installations
660,907	13,298	machine construction
341,451	6,761	—unknown—
647,889	70,262	motor vehicles, parts and bodies
12,853	806	motor cycles, motors and bicycles
284,168	2,010	repair of motor vehicles and bicycles
49,839	3	airplane building
74,881	12,411	data systems and office machines
1,021,770	35,440	electrical engineering
186,708	9,445	precision mechanics and optics
22,831	191	watches and clocks
395,678	4,223	EBM wares
33,273	651	musical instruments, toys and sporting goods
26,355	86	precious stones and jewelry
71,395	380	lumber, particle board and fiber board
334,606	2,275	wood furniture, construction and cabinet making
42,466	446	other wood work
170,080	3,119	paper production and processing
221,092	8,836	printing and copying
43,540	1,585	leather
63,033	265	shoes
32,985	264	textile raw materials on wood machines
82,430	381	textile raw materials on cotton machines
5,106	182	textile raw materials on linen and hemp machines
197,542	2,197	other textile raw materials
287,677	1,782	clothing industry, needle works
20,540	312	upholstery and interior decorating business
348,482	4,341	production of foodstuffs and baked goods
54,627	1,201	production of sweets
182,814	2,586	slaughter houses and fish processing
120,908	2,102	beverage production

1,114,662	20,332	construction
97,218	606	carpentry and roofing
441,845	7,601	finishing trade
2,868,024	67,565	wholesale, retail and mail order trade
158,919	1,605	trains
200,999	7,426	german mail
251,619	4,396	street traffic
69,366	126	ship travel, ship lanes and harbors
199,493	4,640	forwarding agencies, warehouses and cold-storage
91,799	1,574	air travel, pipelines and other transport
741,634	29,402	credit, finance and insurance agencies
405,566	7,088	restaurants and lodgings
183,630	1,943	children's and nursing homes
142,371	3,099	laundromats and dry cleaners
151,712	2,256	beauty parlors and body care services
404,805	8,304	institutions of higher education
165,710	2,411	other educational institutions
76,783	2,979	art, theatre, film, radio and television
129,755	5,218	publishers
953,558	14,042	medical and veterinary services
201,506	5,159	legal and economic counsel
192,624	7,856	architecture and engineering offices
119,374	3,001	property and residential units
40,057	1,685	advertising and exhibitions
19,010	224	photographic industry
78,428	922	hygienic and similar facilities
24,647	368	pawnshops and auctions
108,536	3,252	other services
76,224	3,131	organizations of the economy
125,400	7,476	political parties and non-profit organizations
98,463	2,840	churches, orders, and philosophical societies
46,571	622	private households
873,319	21,069	government
302,869	5,188	defense, public safety and order
156,432	4,834	social insurance
1,789	181	international representation

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